Message

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Sent: 8/19/2021 5:23:23 PM
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All, in addition to Jon checking with HQ on RESRAD, here is an excerpt from TDEC on the former FFS. It may be worth

our while to engage TDEC on this issue (RESRAD) and how HQ would approach the issue for BAF. Please see below.

Mr.John MlchaelJapp
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3) TDEC's analysis of recreational use and fish consumption utilizes bioaccumulatton factors (BAF) available from Argonne National laboratory's RESRAD Offsite documentation. These bloaccumulatlon factors do not always agree with BAFs given In Table K-11. For example, Table K-11 lists the BAF for strontlum-90 of 2.9 Ukg and uranlum-238 of 0.96 Ul<g. RESRAD Offslte documentation lists BAFs for strontium Isotopes of 60 Ukg and uranium isotopes of 1O Ukg. These differences In BAFs will result ln at least an order of magnitude difference In discharge criteria. The source for BAFs used ln Appendix K is not clear.

4) TDEC rule 0400-40-03-.03(4) specifies that when determining levels appropriate for recreational use, a "10-5 risk level is used for all carcinogenic pollutants,"

5) Table K.12 titled "Total recreational risk-based discharge limits" contains 7 radioisotopes plus uranium as a soluble salt. Table H-13 for the "Remedial lnvestigation/Feaslbilltij Study for Comprehensive Environmental Response, Compensation, and liab/1/tij Act; Oak Ridge Reservation Waste Disposal; Oak Ridge, Tennessee" (Waste DisposaI RI/FS) dated 3/11/2016 includes about 62 radionuclides in the waste stream. Bioaccumulatlon factors are available for all but one or two of these radionuclides. Waste Disposal RI/FS, Appendix H, Attachment A, Table 2-2 also includes a number of additional radionuclides that were considered and not modeled for the Waste Disposal RI/FS. Discharge limits based on capture and subsequent consumption of fish (reactional use) should be derived for all constituents in the proposed waste stream that bioaccumulate or bioconcentrate in the fish and that may pose greater than a 10-6 excess cancer risk.

6) Po-21O Is in the U-238 decay chain and previous RESRAD modeling indicated Po-210, if present, may pose a threat from fish consumption at extremely low levels. A discharge level for Po-210 should be developed.

7) For determining allowable releases of radionuclides to Bear Creek for recreational use, Tenl"! ssee Rule 0400-4_0-03-.05(4) req ires that the basis of stream flow. s is equal to or exceeding the 30 day minimum 5 year recurrence Interval. BCK 9.2 Is located near the location where land use is designated as recreational and is in the reach the 2015 RER documents fish.

Using USGS stream stats and USGS site 03538270 (BCK 4.55) scaled for watershed size (watershed at BCK 9.2 is O.38 the size of the watershed at BCK 4.55), a 30 day five year flow on the order of 238 to 272 liters per minute is estimated. Minimum 30 day flow measured by DOE at BCK 9.2 in the past 10 years was 311 llters per minute in October 2007.

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